

REMARKS

Claims 1-4, 8 and 9 stand rejected under 35 USC §102(e) over Suh. The other pending claims stand rejected 35 USC §103 over Suh in combination with other references. However, for the reasons set forth herein below, Applicant believes that certain of the Examiner's interpretations of Suh are incorrect, such that not all of Applicant's limitations are taught or suggested.

By way of a succinct review, Applicant's invention solves the problem of substrate heat build-up during direct-metal deposition.

"In particular, FIG. 2 [reproduced below] illustrates a typical workpiece generally indicated at 32, which includes an underlying metallic substrate 34 with a DMD deposited section 36 formed by a plurality of layers on its upper surface. As the initial layers of the deposited volume 36 are formed, much of the thermal energy of the laser goes to heating the underlying metallic substrate 34. As the deposition continues, the substrate reaches a maximum temperature and thereafter additional laser power goes to melting the powdered metal in previously deposited areas. If constant laser power were applied to each area, the weld pool size would begin to grow as the substrate 34 heats up producing an irregular deposition pattern. The present invention compensates for this phenomenon."

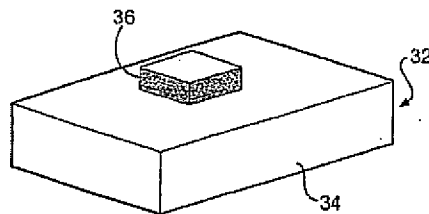


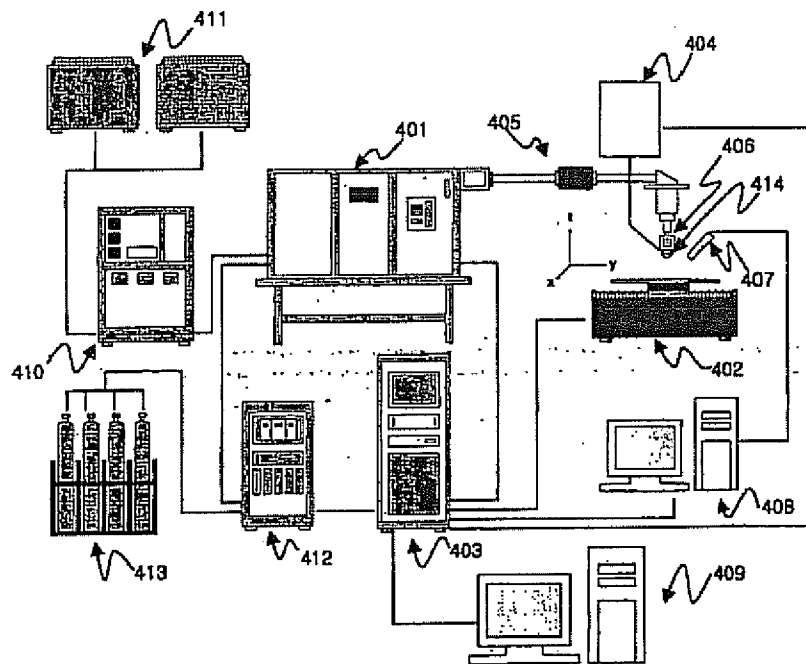
FIG - 2

In compensating for this phenomenon, stored parameters from previous layers must be used to control deposition during subsequent layers. Suh does not consider such a method or system for carrying this out.

The essence of Suh is set forth at [0083]:

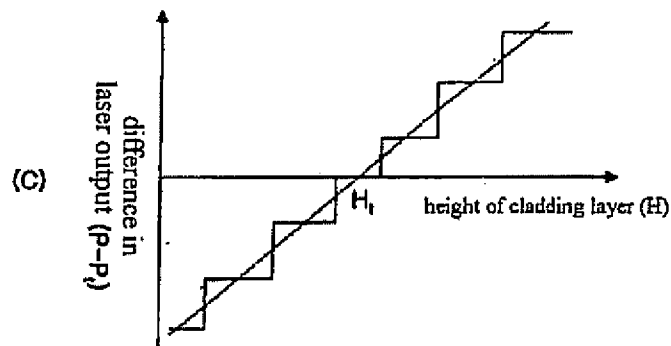
"The control system 403 [see Fig. 4 of Suh, below] receives data on the height of the molten pool from the image processing apparatus 408 every 20 msec,

compares the data with shaping information transmitted from the CAD/CAM apparatus 409, and determines a laser power value required to allow the height of the molten pool to reach a target value. The value determined as described-above is digital data so the value is converted into an analog signal through a D/A converter and inputted to the laser generator 401."



Suh stores no information from previous layers for use in subsequent layers. Rather, the sole, disclosed purpose of Suh is to speed up feedback during the generation of a given melt pool, then move on with no memory of what occurred previously. Indeed, the very fact that Suh is directed to real-time control proves that previously stored parameters cannot be used.

The Examiner's interpretation of Fig. 11C, reproduced below, as showing multiple cladding layers is incorrect.



Rather, “FIGS. 11(A) to (C) are graphs showing relations among a laser power, the height of a cladding layer and a laser power type;” ([0038], emphasis added) Further:

“As shown in FIG. 11(C), in the actual laser power control, the laser power is controlled with the heights of the molten pool classified into groups each having a range. The control of the height of the cladding layer was successfully performed. [0080, emphasis added].

Since Suh, by itself, does not teach or suggest the limitations argued by the Examiner, neither prima facie anticipation nor obvious have been established for this reason alone. This is in addition to other limitations, such as the “sensing parameters of the melt pool at a plurality of selected coordinates during the generation of a plurality of metallic layers.” It is Applicant’s position that to the extent that Suh even senses at a plurality of selected coordinates, it is certainly not done “during the generation of a plurality of metallic layers” for later storage and retrieval.

Based upon the foregoing amendments and comments, Applicant believes the pending claims are in condition for allowance. Questions regarding this application may be directed to the undersigned attorney at the telephone or facsimile numbers provided.

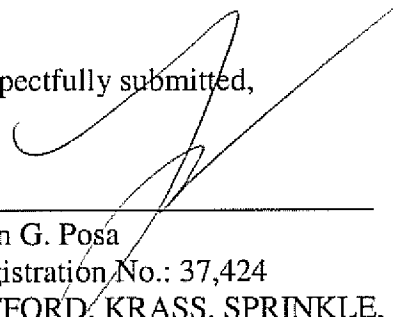
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8

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Respectfully submitted,

By  _____

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